



# Productivity Increase Solutions for the Sugar Industry

Regenerative AC Systems Drive

aerospace  
climate control  
**electromechanical**  
filtration  
fluid & gas handling  
hydraulics  
pneumatics  
process control  
sealing & shielding



ENGINEERING YOUR SUCCESS.

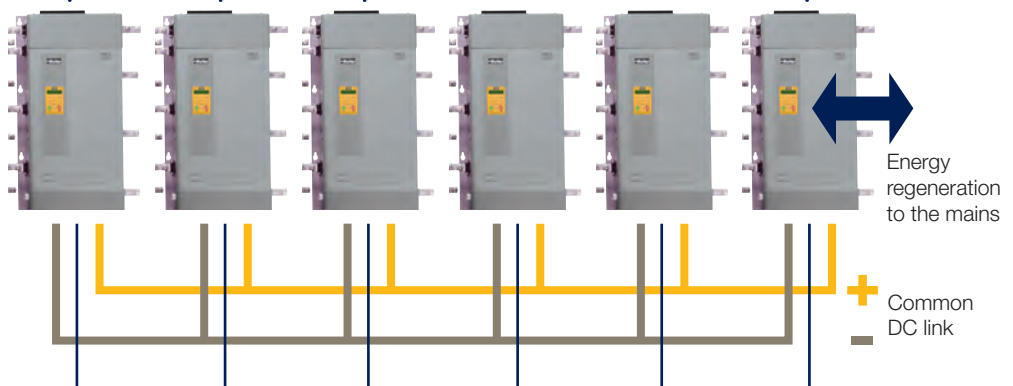
# Revamping a Batch Centrifuge Pays for Itself in Less than 24 Months

Factory: Sweet Crystals Integrated Sugar Mills – Location: Porac, Pampanga, Philippines

## The Project

Sweet Crystals Integrated Sugar Mill (SCISM) is a company specialized in the transformation of cane and production of sugar. It operates 3 sugar mills in the Philippines.

SCISCM wanted to improve the productivity of its centrifuges by shortening their cycle times. However, SCISM was facing many problems: the centrifuges were fitted with two-speed motors started direct-on-line. Firstly, during those direct-on-line starts, high inrush currents were drawn from the mains: the diesel alternator supplying electricity to the whole factory couldn't stand the peak power increase resulting from the planned reduction in the centrifuges' cycle times. Secondly, the centrifuges' speed was changed by contactors switching roughly the motors' speed, which stressed the mechanics and caused frequent breakdowns. Finally, during the deceleration of the baskets, huge amounts of energy were lost in motor heating. Confronted with those challenging issues, SCISM turned to Parker SSD to find a solution.



## High speed sequencing bus

## Parker SSD's Solution

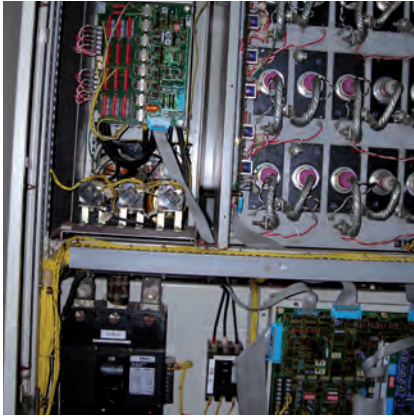
Parker SSD proposed an innovative solution based on its regenerative AC drives linked on a common DC bus and sequenced in a way which reduces the overall demand on the diesel alternator.

Beside the drives, Parker SSD offered technical assistance throughout the project: from the specifications stage, system design, electrical drawings, cubicle testing and system commissioning to production ramp-up, experienced system engineers will assist you.

On the day agreed with SCISM, the machine was ready to start as planned.

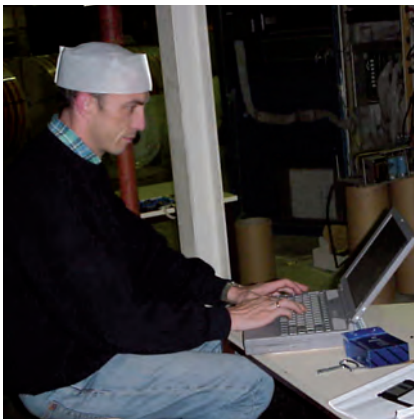
## Parker Offering

- AC690+ - 180kW regenerative drives to save energy
- Smoothly controlled AC motors
- Innovative centrifuge start stop sequencing to reduce the overall demand of the system on the mains
- Project management from specifications to production ramp-up



## The existing machine

- 1000kg batch centrifuge
- Installed power: 180kW
- Six two-speed motors with contactors
- Cycle time limited to 180 sec



**“For SCISM, the revamping resulted in a reduction of about 25% of the overall power consumption from the mains.”**

## Benefits

### Energy Savings

During the operation of the machine, the energy from spinning centrifuges is no longer wasted as heat in braking resistors but transferred to motoring centrifuges via a common DC link; thanks to Parker SSD regenerative drives, that energy may be fed back to the mains when the machine is globally regenerating.

For SCISM, this resulted in a reduction of about 25% of the overall power consumption from the mains.

On the batch centrifugal station alone, the energy savings amount to around 160kWH per hour of operation.

### Better Reliability

The centrifuges are now smoothly controlled by Parker SSD Drives during the whole machine cycle.

As the result, the frequent mechanical breakdowns have completely disappeared.

Since the end of the revamping project at SCISM, the batch centrifuge’s uptime increased significantly, resulting in an extra improvement of the factory productivity.

### Short Payback Period

With fewer machine downtimes, a better productivity and a dramatic energy consumption reduction, the investment in the revamping is typically recovered in less than 24 months.

Considering only the energy savings made on the batch centrifuge, SCISM enjoyed a payback period of 18 months.

### Higher Productivity

Parker SSD drives can control precisely, accelerate and brake safely the centrifuges’ inertias throughout the cycle of operation.

The batch centrifuge cycle time was reduced by approximately 20%, from 180 seconds to 150 seconds. The centrifuge is now running at around 24 cycles per hour instead of 20 cycles per hour: that productivity improvement yields an additional sugar production of 4000kg per hour obtained while consuming less energy!

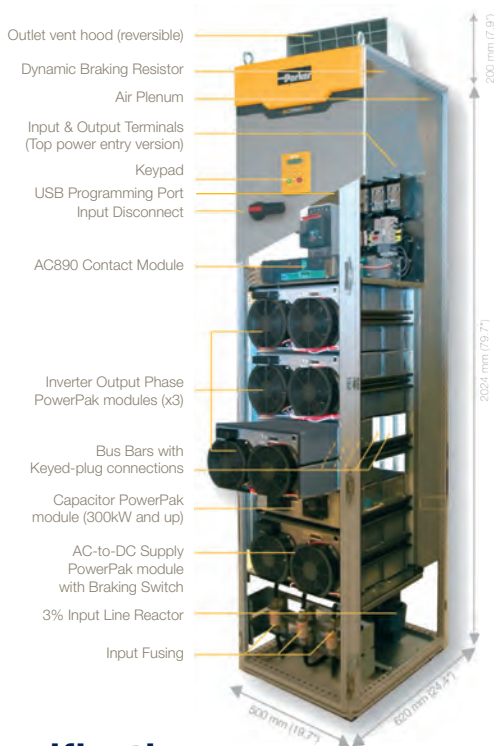
### Reduction of Peak Power

Thanks to Parker SSD innovative cascade control, the batch centrifuges can be sequenced so as to dramatically minimize the peak power demand on the mains. Hence, since equipped with Parker SSD drives, SCISM factory reduced its peak power demand on its diesel generator.

**“That productivity improvement yields an additional sugar production of 4000kg per hour obtained while consuming less energy!”**

# AC890PX High Power Modular AC Drives

110kW – 400kW (150 – 600 HP)



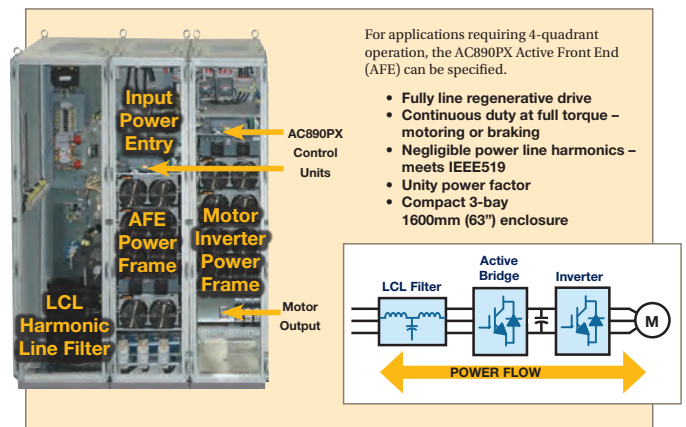
## Specifications

Operating Specifications	
Std Duty O/L Rating	100% for 60 seconds
Heavy Duty O/L Ratings	150% for 60 seconds
Servo Torque Ratings	Consult Factory
Output Frequency	0 – 200Hz; WHz mode 0 – 200Hz; closed loop vector mode 0 – 120Hz; sensorless vector mode
Switching Frequency	2KHz (standard default), adjustable to 4KHz** de-rating may apply; consult factory. Audibly silent switching frequency pattern.
Dynamic Braking	Built-in DB switch and DB Resistor Standard 100% Torque rated (limited duty) Option on external resistor.
Ambient Temperature	0°C to 40°C (32°F to 104°F)
Product Enclosure	Rating IP21/NEMA 1 standard. IP52 and higher available as special order.
Enclosure Rating	Enclosure provides 15dB attenuation to radiated emissions between 3–100MHz
Humidity	Maximum 90% relative humidity at 40°C non-condensing
Atmosphere	Non-flammable, non-corrosive and dust free
Climate conditions	Class 3k3, as defined EN50178 (1998)
Vibration	Test Fc of EN60058-2-6

Standards	
Pollution Degree	Pollution Degree II (non-conductive pollution, except for temporary condensation)
Europe	This product conforms with the Low Voltage Directive 73/23/EEC with amendment 93/68/EEC, Article 13 Annex. Illusing EN50178 (1998) to show compliance Meets EN1600-3 (2nd environment)
North America/Canada	Complies with the requirements UL 506C

- A unique high power AC drive with modular architecture
- Ready-to-use drive: Line fuses, input line reactor, AC line disconnect included for easy installation
- Patent pending technology plug-in modules reduce down time
- 380, 415, 460, 575, and 690 volt inputs accommodated
- Dynamic braking switch and resistor included
- Safe Stop input\*.

## Line Regenerative Capabilities



# AC890 AC Systems Drive

0.75 – 1200kW (1 – 1500 HP)



- Compact, modular systems drive engineered to control speed and position of open-loop AC motors or servo motors
- 208-500 volt inputs
- Easy installation
- High performance drive for demanding applications
- Flexible feedbacks: incremental encoder, EndDat 2.1 (Sine Cosine) encoder, resolver
- Open to industrial fieldbus standards (Profibus, Devicenet, ...)
- Open Firewire IEEE 1394 peer-to-peer fieldbus

## A High Performance Design

\*Stand alone version shown

### Features

#### High Speed feedback

- Incremental encoder
- EnDat® 2.1 (SinCos) encoder
- Resolver

#### Open FireWire IEEE 1394 Process Port

- 125µs cycle time
- Real-time synchronization between drives



#### Open Communications



#### Fast 150Mhz micro processor



### Benefits

#### Minimal delay between the fieldbus setpoints and the control loops

Designed to integrate in existing automation systems, the AC890 features high performance ports linked directly to the fast control loops of the drive.

Minimum delay exists between your digital setpoint sent through a fieldbus and the control loops.

#### Replacement of analogue solutions

Your existing analogue setpoint-based solutions can be replaced by a digital fieldbus-based solution with minimal bandwidth loss.

#### Flexible feedback

The AC890 offers system designers complete flexibility in their choice of feedback technology.

#### Open standards for protection of investment

The AC890 has been deliberately designed to integrate seamlessly into your automation network.

To connect to your PLC or fieldbus network you can simply choose from the wide range of communication technology boxes.

#### Serves the most demanding applications

Taking advantage of leading edge control algorithms running on a fast 150Mhz microprocessor, the AC890 drive can achieve very high-bandwidth control loops.

This allows you to use the drive for the most demanding industrial applications e.g. printing, cut-to-length, rotary shear, converting and slitting.

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